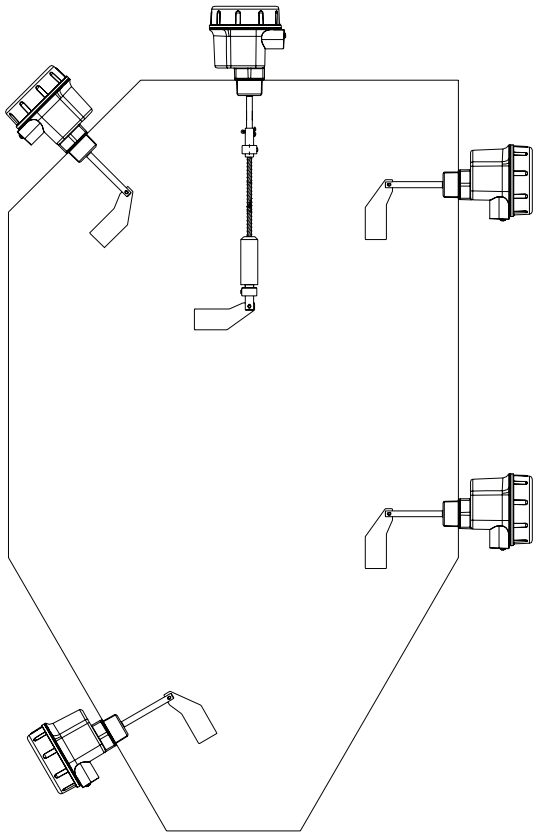
Solido® 500

Level Limit Switch for Solids
Technical Information

Applications / Principle of operation

General Description

The Solido® 500 bin level indicator is an electromechanical rotating paddle limit switch designed for level monitoring of bulk solid materials. When installed on a vessel containing bulk solid material, it may be used to indicate high level for overflow protection, low level for empty detection, or at any point along the height of a bin at which point level indication is necessary.



Principle of Operation

A rotating measuring vane is driven by a brushless synchronous motor at one revolution per minute. When material in the vessel makes contact with the vane, rotation is impeded and the resulting motor torque activates an output switch and stops the motor. As material in the vessel ceases to impede rotation of the vane, a spring mechanism returns the unit to a normal state, thereby deactivating the output switch and reactivating the motor.

Applications

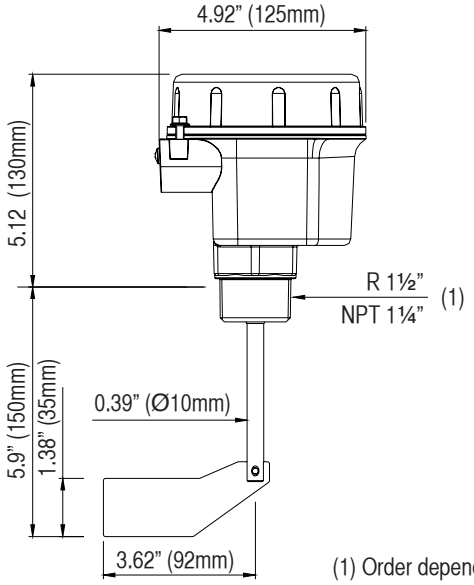
The Solido® 500 bin level indicator is designed to detect the presence of most bulk solid materials, including:

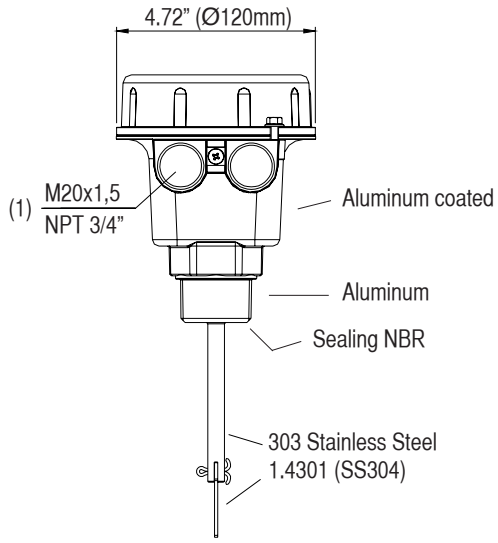
- Plastic Powders and Granulates
- Building Materials
- Food Materials
- Wooden Fibers and Pellets
- Any Material with a Density Able to Impede Vane Rotation

Features

- Deactivating Motor for Extended Life
- Insertable Paddle
- Field Adjustable Sensitivity
- Dual Conduit Entries
- Stainless Steel Paddle and Shaft
- Threaded Screw-on Cover
- Shaft Extensions
- Multiple Voltages
- FM and ATEX hazardous approvals

Dimensions / Construction material



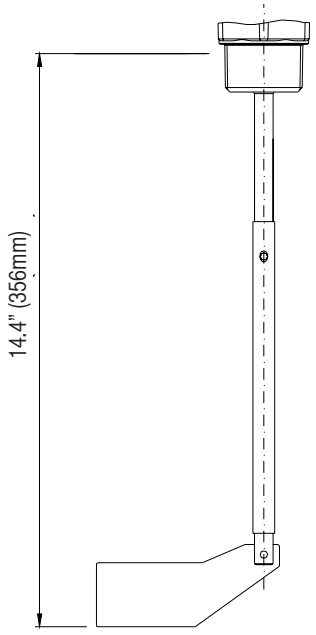


(1) Order dependent
R 1½" (DIN 2999) and M20x1.5
or
NPT 1¼" (ANSI B 1.20.1) and NPT ¾"

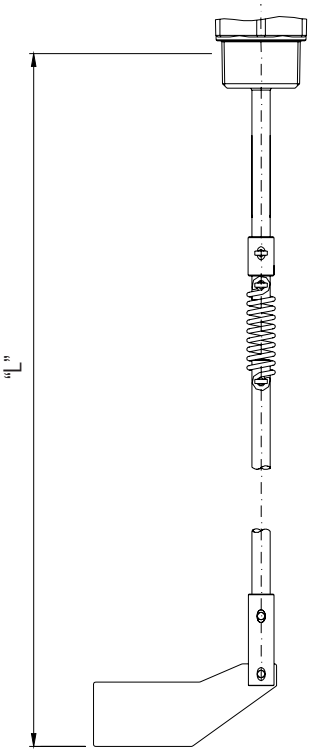
Extensions (accessory)

All extensions will be delivered as a kit.
All parts 303 Stainless Steel.
Observe maximum permitted load. For use only during high level detection inserted at top of vessel.

Rigid extension



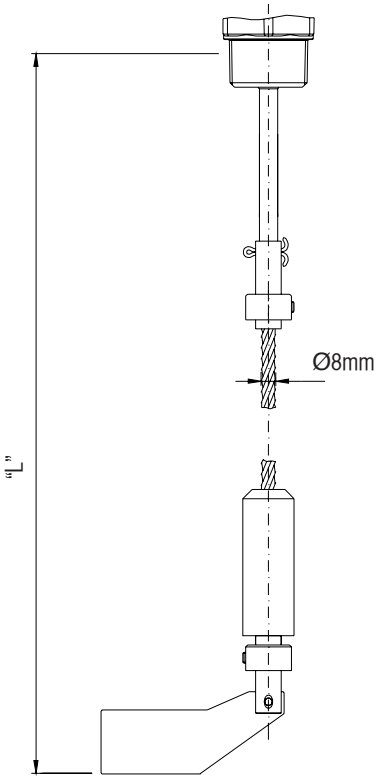
Pendulum shaft



L = 21.7" (0,55m)
Shaft can be cut, mounting holes drilled at
L = 13.8/17.7" (0,35/0,45)

alternative
L = 41.3" (1,05m)
Shaft can be cut, mounting holes drilled at
L = 25.6/29.5/33.5/37.4" (0,65/0,75/0,85/0,95m)

Rope extension



L = 78.7" (2,0m)
Rope can be cut

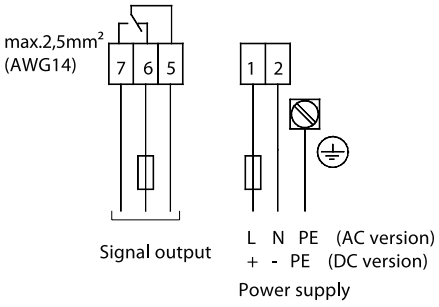
Mechanical data

Housing	Aluminum, powder coated
Ingress Protection	NEMA 4; IP 66
Wetted Materials	Paddle: 304 SS Exposed Shaft 303 SS Shaft Seal: NBR (butadiene-acrylnitrile rubber) Process Connection: Aluminum
Bearing	Teflon Coated Slide Bearing
Friction Clutch	Protects gears against mechanical loads to the vane/shaft
Process Connection	1 1/4" NPT Threaded
Conduit Connection	3/4" NPT Female Threaded
Weight	2.6 lbs (1.2kg); Without Extensions

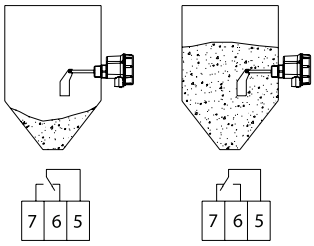
Electrical data

Power Requirement	115 VAC, 230 VAC, and 24VDC Available
Power Consumption	AC versions: 4VA DC version: 2.5W
Signal Output	SPDT relay contact microswitch AC versions: 5A @ 250V DC versions: 3A @ 30V
Permitted Fuse	5A maximum
Protection Class	I
Installation Category	III
Pollution Degree	2
Isolation	Power Supply to Signal Output: 2225 Vrms

Electrical connection:



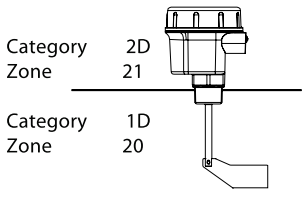
Switching logic:



Operating conditions

Temperature Limits	Process: -13 to 176°F (-25 to 80°C) Ambient: -4 to 140°F (-20 to 60°C)
Process Pressure	11.6 psi (0.8 bar) maximum
Sensitivity	6 lb/ft^3 (100 g/l) minimum (three sensitivity settings)
Bulk Material Properties	2 inch (50mm) maximum grain size
Permitted Mechanical Load	Standard shaft: maximum 67 lb$_f$(300N) Extended shaft: maximum 22 lb$_f$(100N)
Traction Load:	Solid rod shaft: 90 lb$_f$(400N) Rope extension shaft: 337 lb$_f$(1500N)

Hazardous Rating Data

Approvals	FM DIP Cl. II,III Div.1 Gr. E, F, G and ATEX II 1/2D Ex tD A20/21
Zone classification for ATEX	see figure right hand
Max surface temperature	

Ambient temperature		Max. surface temperature	Temperature Class
Zone 21	Zone 20		
+ 104°F (40°C) + 122°F (50°C) + 140°F (60°C)	176°F (80°C) 176°F (80°C) 176°F (80°C)	185°F (85°C) 203°F (95°C) 221°F (105°C)	T6 T5 T4A